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ABSTRACT

The Stark Metropolitan Housing Authority in Canton, Ohio (Stark Metro), has established and implemented an after school education program for its residents. Although the various educating programs range from encouraging kindergarten reading readiness to promoting job skills for adults, the primary function of the program is to help elementary and secondary education students be more successful in school. Throughout the last few years, computers have played an increasingly larger role in this effort, and the PLATO computer-based learning system was implemented to assist in providing individualized learner support. The purpose of this evaluation was to report on how the PLATO program is being used in the Stark Metro program and to summarize the attitudes of learners and instructors. Telephone interviews were conducted with the program supervisor, and questionnaires were completed by staff and students. The PLATO program data file was imported into a statistical analysis computer program. Approximately half of the programs 767 assigned identification numbers actually recorded an completion score on at least 1 lesson. Evaluation results show that the PLATO program is used in an informal way to support basic reading and mathematics schools. Instructors were very satisfied with the program, and learners reported positive attitudes about the computer-based lessons. They thought PLATO was improving their confidence and performance in school. (Contains 47 figures and 12 tables.) (SLD)

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PLATO®

Evaluation Series

Stark Metropolitan Housing Authority

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Executive Summary

This report presents an evaluation of how PLATO Learning s program has been used by the Stark Metropolitan (Stark Metro) Housing Authority in Canton, Ohio to implement a computer-supported after school education program for its residents. Although the various education programs facilitated by the Stark Metro education centers range from encouraging kindergarten reading readiness to promoting job skills for adults, the primary function of the program is to help elementary and secondary education students be more successful in school. Throughout the last few years, computers have played an increasingly larger role in this effort, and the PLATO learning system was implemented to assist in providing individualized learner support.

The results of this evaluation indicate that the PLATO program is used in an informal way to support basic reading and math skills. The part-time instructors are very satisfied with the scope and sequence of the computer-based materials, and they are happy with the program s ease of use and helpful support. The learners reported positive attitudes about participating in the computer-based lessons, and they indicated that the PLATO lessons are improving their confidence and performance at school.

In an effort to paint a picture of how the PLATO material is utilized, time, and learner mastery data analyses for the Reading Horizons, Reading 1, and Math Fundamentals curricula are graphically summarized and presented.

Table of Contents

Executive Sumary 2

Introduction 4

Program Description 4

Curriculum and Course-Level Analyses 7

Reading Horizons Data Analysis 7

Math Fundamentals Data Analysis 14

Reading 1 Data Analysis 54

Instructor Survey Data Tabulation 67

Learner Attitudes 69

Conclusions & Discussion 79

Introduction

The Stark Metropolitan Housing Authority (Stark Metro) in Canton, Ohio has established and implemented an after school education program for its residents. Although the various education programs range from encouraging kindergarten reading readiness to promoting job skills for adults, the primary function of the program is to help elementary and secondary education students be more successful in school. Throughout the last few years, computers have played an increasingly larger role in this effort, and the PLATO learning system was implemented to assist in providing individualized learner support.

The purpose of this evaluation is to report how the PLATO program is being utilized within the Stark Metro education program, and to summarize the general attitudes of both the learners and the instructors of the program. Phone interviews were conducted with the Stark Metro youth activities supervisor, and attitude surveys were distributed to the instructors and students. In addition, the PLATO program data collection file was obtained and imported into a statistical analysis computer program.

Program Description

Ed Frankovich is the Youth Activities supervisor for Stark Metro. One of his most important responsibilities is to facilitate the after school education program for families living in the Stark Metro housing development. He feels this education program plays a fundamental role in supporting the mission of the housing authority, which is to provide safe, affordable housing for residents of Stark County.

As an extension of community services, we provide training and resources to move people out of the housing development, commented Frankovich.

By providing educational support for kids and their parents, we try to prepare kids so they will be more successful with the challenges they face in school. And these kids bring in parents and other members of their family, which gets everybody more involved in education. Some of the adults also take advantage of the life and job skills computer programs. We are confident this program will have a positive impact on getting families into more economically stable environments.

A major part of Stark Metro s education program centers around individualized instruction, facilitated by the use of the PLATO® learning program. According to Frankovich, most of the students ...are family members of Metro housing residents. Almost all these families are transitory--spending about one and a half years in the housing development. They are all within the lower socio-economic status, and they range from Kindergartners to Senior Citizens. However, most are between 7 and 12-years old.

The Stark Metro education program is administered through two separate facilities in Stark County. Both are situated within the subsidized housing developments, and they each have a classroom with approximately 8 computers. Educational support is generally available to participants for a few hours after school, with the classrooms open during the daytime hours on Saturdays as well. The classrooms are staffed by four part-time instructors who, apart from being encouraging and supportive teachers, represent positive role models for the students. One of the instructors is even a former resident of the Stark Metro housing development. None of the instructors are certified teachers, and they do not possess a high degree of computer experience.

The daily operation and management of the education program is rather informal. Participants can sign up for one-hour computer sessions throughout the week, and they may also drop in unscheduled if a computer is available. This year, approximately 150 learners have signed up for computer-mediated help using the PLATO system. The instructors select where the students should begin their PLATO instruction based on an informal evaluation of their level and progress at school. Students are encouraged to bring in homework, and the instructors try to coordinate PLATO lessons with skills indicated in the schoolwork the students may bring, paying special attention to the reading levels and abilities of all students. Because each student may have different needs and abilities, they work at their own pace for up to one-hour per session. If they don t

have a specific skill with which they need help, they will log into a default PLATO sequence. Most learners spend about one and a half hours per week logged into the PLATO system.

More than half of the PLATO participants spend at least one full semester using the program. A few may remain for a year or more. All learners enroll at the request of their parents or guardians, with only a few students referred by their schools.

Curriculum and Course-Level Analyses

Because of the wide variety of users who have participated in various PLATO sessions at the Stark Metro education centers, most of the courses and curricula within the PLATO system have been accessed. However, due to the unstructured nature of the education program, very little data is available from students who have completed entire courses or curricula. In fact, out of the 767 unique identification numbers assigned to users who have logged onto the PLATO system, approximately half have recorded a mastery score on at least one lesson, and fewer than 200 have recorded a mastery score on the final module within any single curriculum.

An overview of the entire data file indicated that the most widely-used curricula experienced by learners at the two Stark Metro education centers (and the only curricula in which all its modules were mastered by more than one or two users) were the Reading Horizons, Math Fundamentals, and Reading 1 curricula.

Reading Horizons Data Analysis

The data for learners experiencing the Reading Horizon curriculum indicate that 50 students mastered module *}rhb-Lessons 2-7*, representing 18.1% of the 277 students participating in this module (see Figure 1.3). Thirty-eight learners mastered module *}rnc-Lessons 8-9*, representing 28.8% of the 132 students participating in this module (see Figure 1.4). Only one students recorded a mastery score for module *}rhd-Lessons 10-17*, representing 3.3% of the 30 students participating in this module (see Figure 1.5). No mastery scores were recorded for learners participating in the *}rhe*, *}rhf*, or *}rhphonics* Reading Horizons modules.

Figure 1.1 displays the average amount of time spent by learners participating in the various Reading Horizons modules. These data indicate that the average amount of time spent by learners within a module was 106.1 minutes (SD=153.4). Time summaries, including standard deviations as well as total number of learners for each module, are reported in Table 1.1.

Figure 1.1

Reading Horizons Mean Experience Time by Module

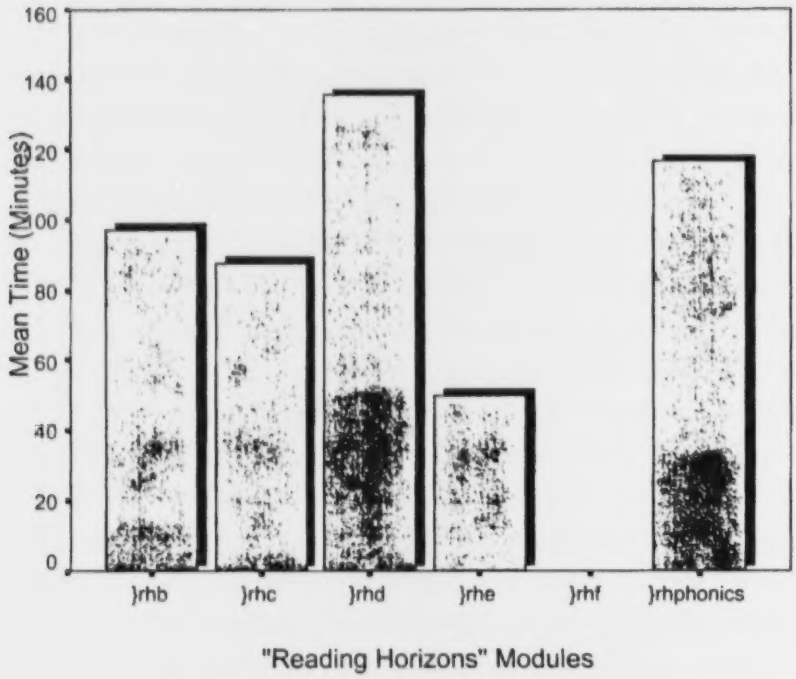


Table 1.1

Reading Horizons Time Summaries by Module

Module	N	Statistic	Total Time (Minutes)
}rhb	277	Mean	97.2
		SD	113.1
}rhc	132	Mean	87.7
		SD	121.9
}rhd	30	Mean	135.4
		SD	135.2
}rhe	1	Mean	50.0
		SD	
}rhf	1	Mean	.0
		SD	
}rhphonics	395	Mean	116.7
		SD	185.0
Total		**Mean**	**106.1**
		SD	**153.4**

Figure 1.2

Number of Students Mastering Reading Horizons Modules

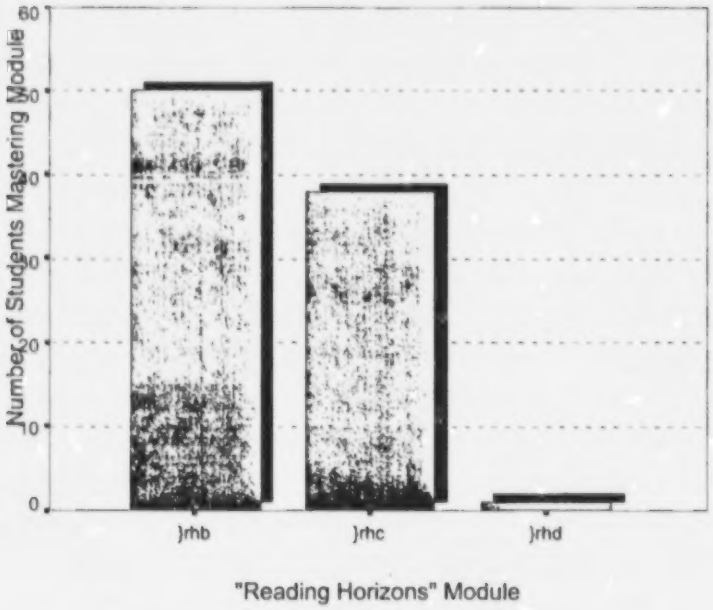


Figure 1.3

Number of Students Mastering versus Total Number Experiencing Reading Horizon Module }rhb: Lessons 2-7

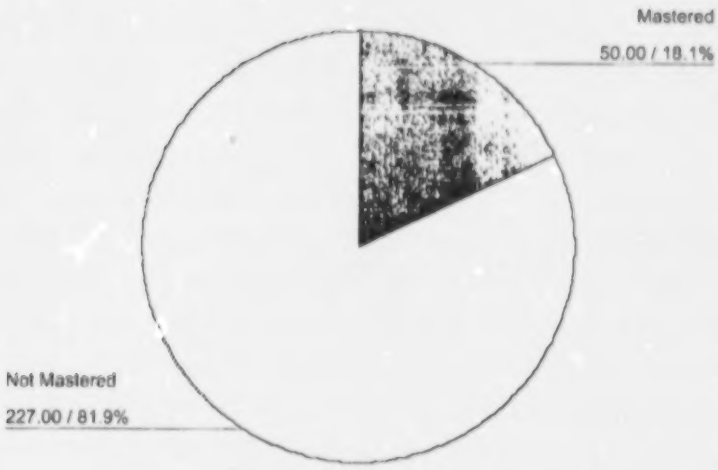


Figure 1.4

Number of Students Mastering versus Total Number Experiencing Reading Horizon Module }rhc: Lessons 8-9

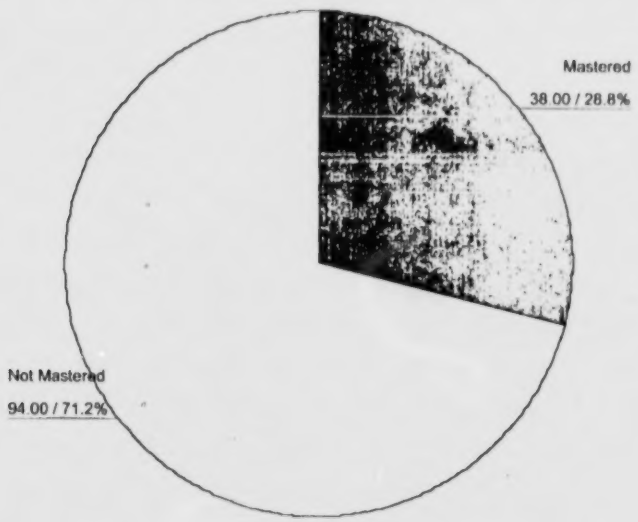
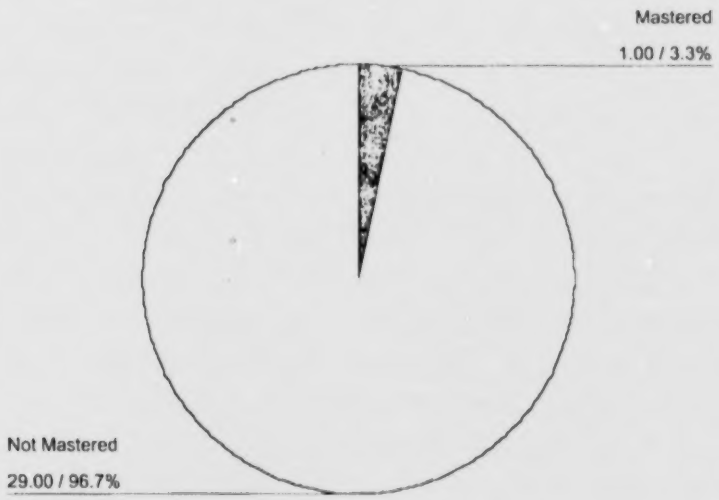


Figure 1.5

Number of Students Mastering versus Total Number Experiencing Reading Horizon Module }rhd: Lessons 10-17



Math Fundamentals Data Analysis

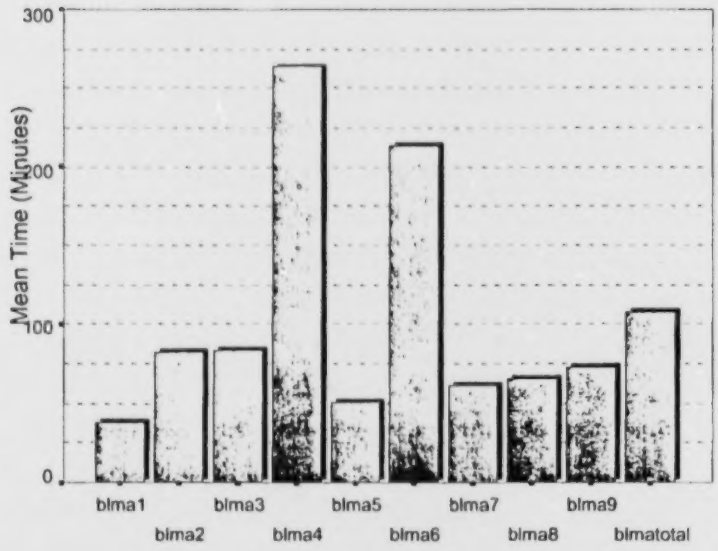
The total time expended by those learners mastering one or more of the nine different Math Fundamentals courses was calculated and is displayed in Figure 2.1. The number of students mastering each of the Math Fundamentals courses is displayed in Figure 2.2, and the total time and number of attempts for learners mastering the courses are displayed in Table 2.1. These data indicate that out of the 173 learners experiencing all or part of the course *blma1-Basic Number Ideas*, nine learners (5.2%) mastered the course (see Figure 2.3). Learners mastering the module spent an average 38.6 minutes within the course, and attempted the course 1.8 times.

Fourteen (6.3%) out of 224 learners mastered the course *blma2-Addition* (see Figure 2.4), averaging 82.7 minutes and 6.7 attempts. Nine (9.5%) out of 95 learners mastered the course *blma3-Subtraction* (see figure 2.5), averaging 83.3 minutes and 3.6 attempts. Nine (5.4%) out of 168 learners mastered the course *blma4-Multiplication* (see figure 2.6), averaging 263.7 minutes and 8.7 attempts. Three (3.7%) out of 82 learners mastered the course *blma5-Division* (see figure 2.7), averaging 51.0 minutes and 1.7 attempts. Three (3.4%) out of 87 learners mastered the course *blma6-Fractions* (see figure 2.8), averaging 213 minutes and 4 attempts. Three (6.8%) out of 44 learners mastered the course *blma7-Decimals* (see figure 2.9), averaging 61.0 minutes and 1.7 attempts. Three (12.0%) out of 25 learners mastered the course *blma8-Ratio/Proportion/Percent* (see figure 2.10), averaging 65.3 minutes and 1.3 attempts. Finally, three (6.5%) out of 46 learners mastered the course *blma9-Geometry and Measurement* (see figure 2.11), averaging 73.3 minutes and 2.0 attempts. Learners earning a mastery score on at least one course assessment averaged 107.5 minutes within the Math Fundamentals curriculum.

Data for all learners experiencing individual modules within each of the Math Fundamentals courses are displayed in Figures 3.1-3.18. These figures represent the average time and number of learners mastering individual module assessments within each of the Math Fundamentals courses. Note that each time bar chart also includes a bar displaying the average amount of time spent within each course (for example, this bar is titled blm1total in Figure 3.1). In addition to time means and standard deviations for each module within each course, Tables 3.1-3.9 also include average number of attempts per module.

Figure 2.1

Mean Total Time for Students Mastering Each Math Fundamentals Course Assessment



Note: The total bar on the far right represents the average time by each individual learner within the entire Math Fundamentals curriculum.

Figure 2.2

Number of Students Mastering Each Math Fundamentals Course Assessment

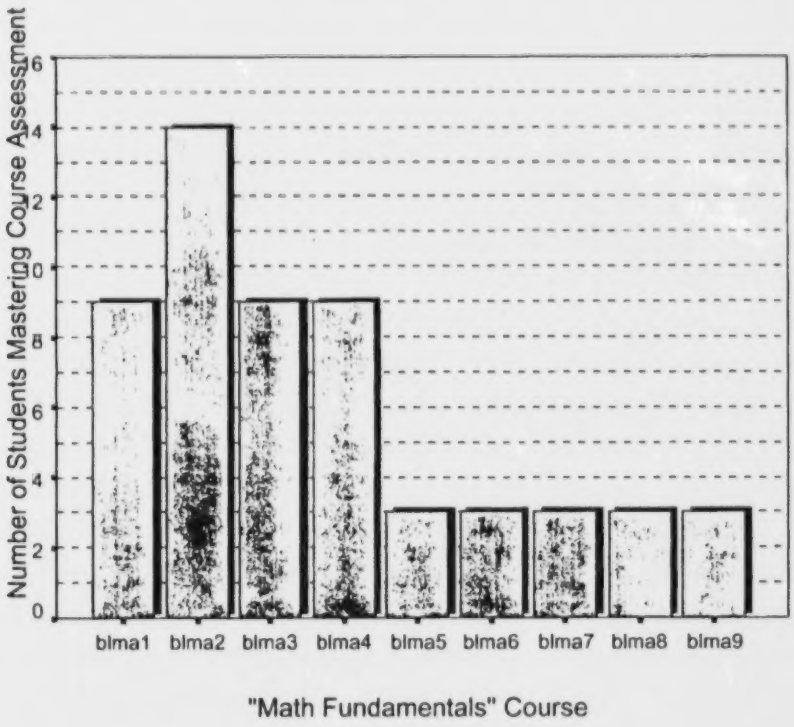


Table 2.1

Math Fundamentals Performance Summaries for Students Mastering Course Assessment

Time and Number of Attempts for Students Mastering "Math Fundamentals" Course Assessments

Course		Total Time	# of Tries
blma1	Mean	62.6	2.5
	SD	86.1	2.3
	N	173.0	173.0
blma2	Mean	98.4	4.0
	SD	135.9	5.8
	N	224.0	224.0
blma3	Mean	48.9	2.7
	SD	80.7	3.7
	N	95.0	95.0
blma4	Mean	120.4	4.6
	SD	178.8	8.3
	N	168.0	168.0
blma5	Mean	53.2	2.1
	SD	122.7	2.5
	N	82.0	82.0
blma6	Mean	65.3	2.4
	SD	123.7	2.9
	N	87.0	87.0
blma7	Mean	30.2	1.9
	SD	36.0	1.3
	N	44.0	44.0
blma8	Mean	34.8	2.0
	SD	51.1	2.7
	N	25.0	25.0
blma9	Mean	30.3	3.5
	SD	67.5	6.4
	N	46.0	46.0
Total	Mean	75.6	3.2
	SD	126.2	5.2

Figure 2.3

Number of Students Mastering Versus Total Number of Students Participating in Math Fundamentals Course blma1: Basic Number Ideas

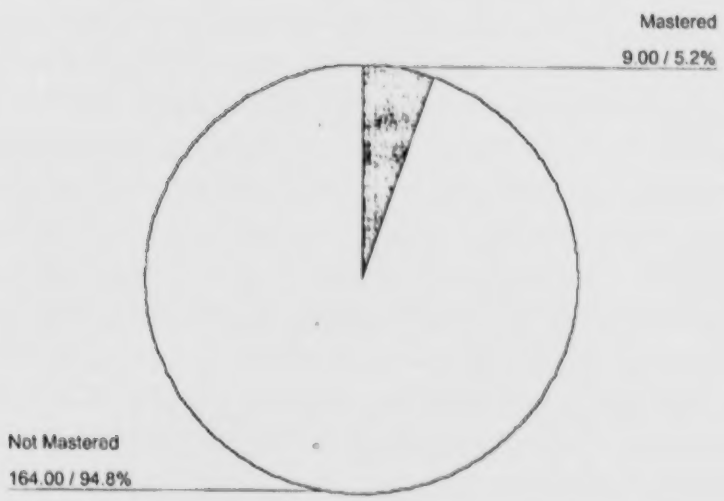


Figure 2.4

Number of Students Mastering Versus Total Number of Students Participating in Math Fundamentals Course blma2: Addition

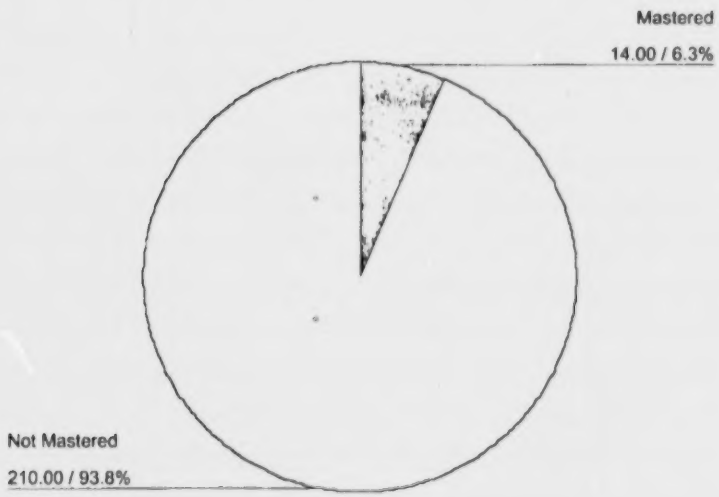


Figure 2.5

Number of Students Mastering Versus Total Number of Students Participating in Math Fundamentals Course blma3: Subtraction

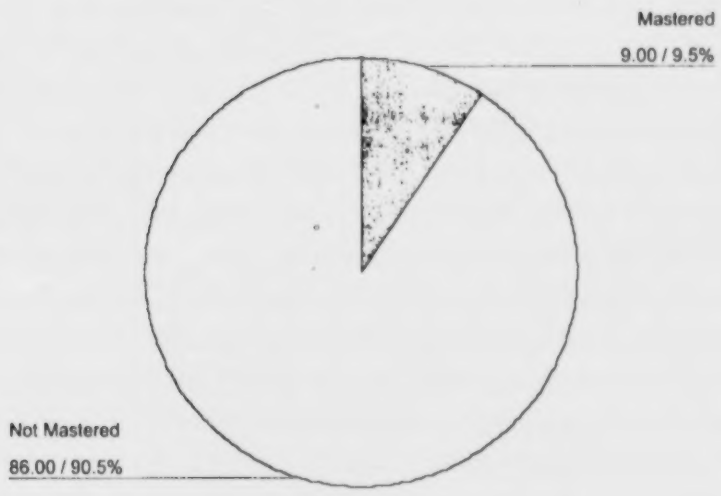


Figure 2.6

Number of Students Mastering Versus Total Number of Students Participating in Math Fundamentals Course blma4: Multiplication

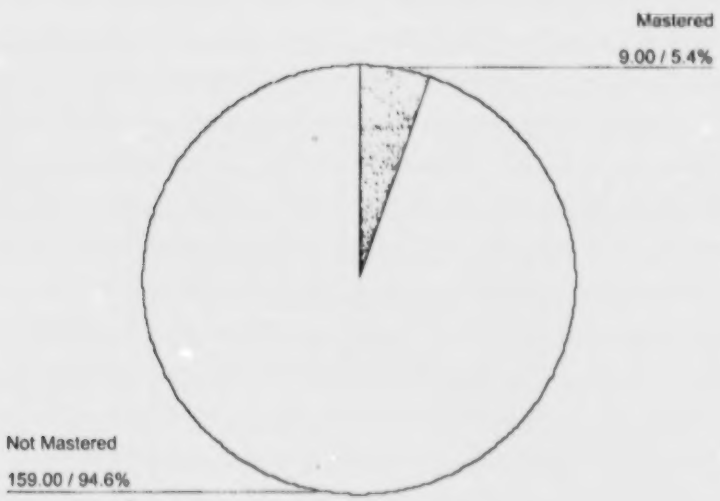


Figure 2.7

Number of Students Mastering Versus Total Number of Students Participating in Math Fundamentals Course blma5: Division

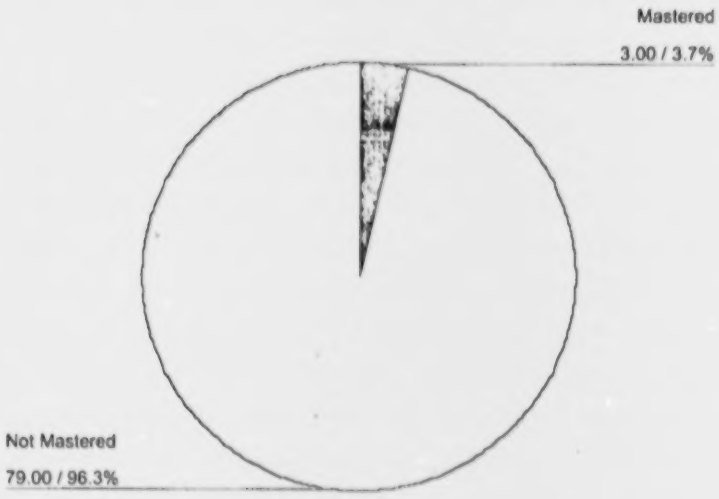


Figure 2.8

Number of Students Mastering Versus Total Number of Students Participating in Math Fundamentals Course blma6: Fractions

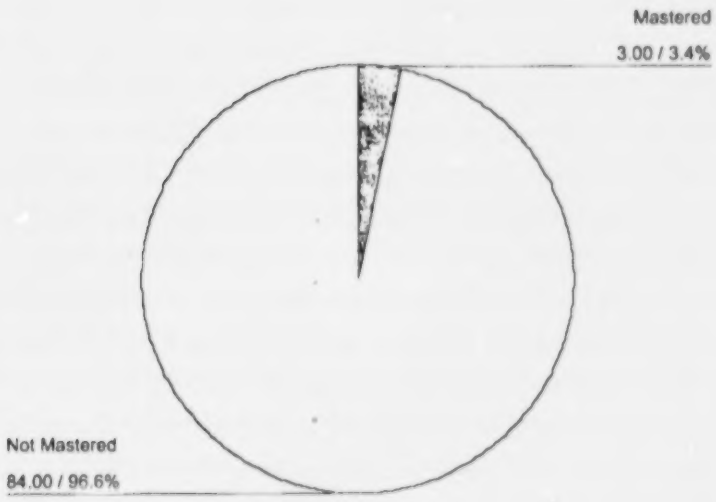


Figure 2.9

Number of Students Mastering Versus Total Number of Students Participating in Math Fundamentals Course bima7: Decimals

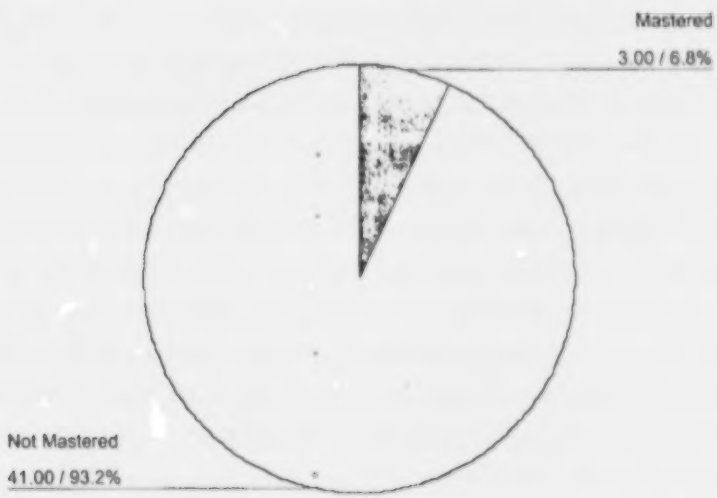


Figure 2.10

Number of Students Mastering Versus Total Number of Students Participating in Math Fundamentals Course bima8: Ratio/Proportion/Percent

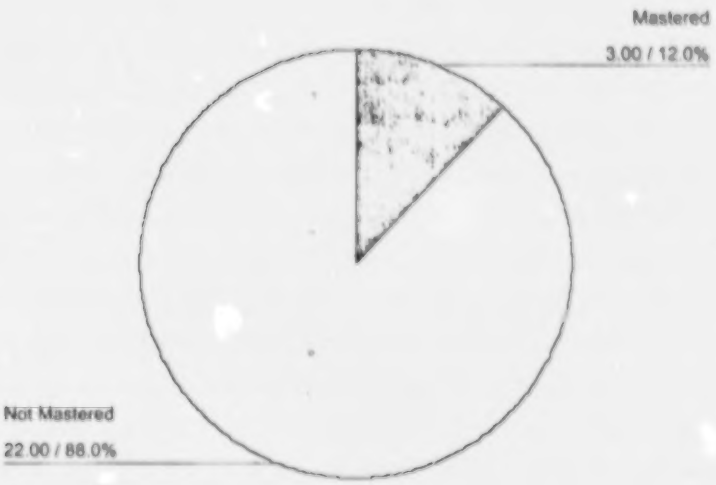


Figure 2.11

Number of Students Mastering Versus Total Number of Students Participating in Math Fundamentals Course blma9: Geometry and Measurement

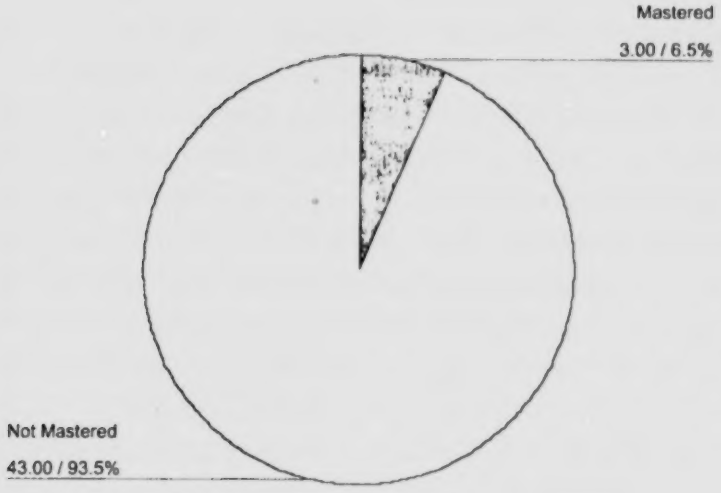
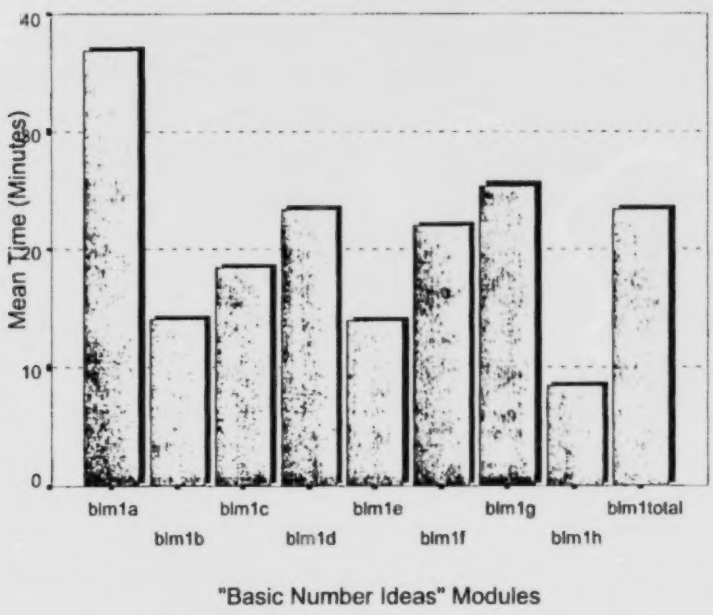


Figure 3.1

Math Fundamentals: Basic Number Ideas Mean Module Times



Note: The total bar on the far right represents the average time by each individual learner within the entire module.

Figure 3.2

Number of Students Mastering Math Fundamentals: Basic Number Ideas Module

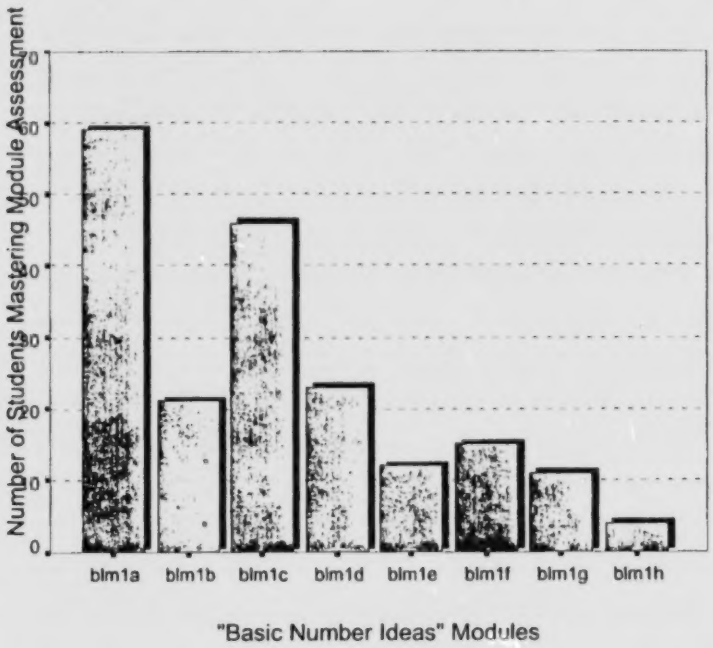


Table 3.1

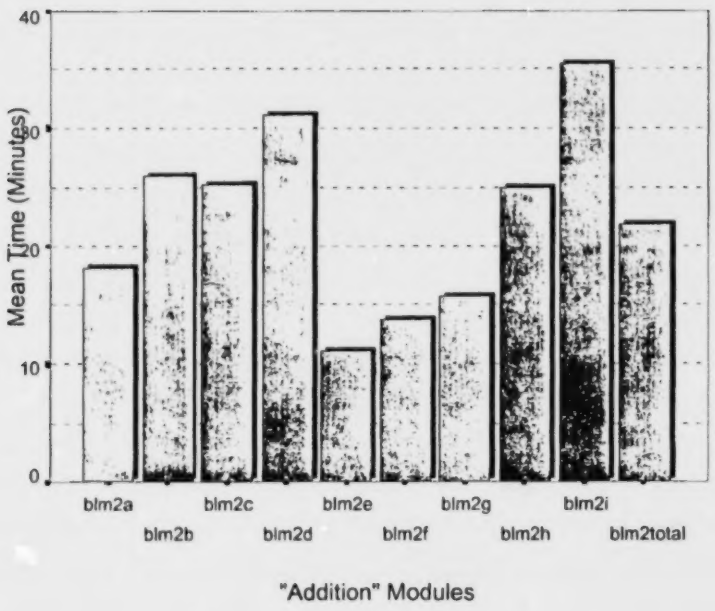
Total Time (Minutes) and Number of Tries for Students Mastering Each Math Fundamentals: Basic Number Ideas Module

Total Time and Number of Tries for Students Mastering Each "Basic Number Ideas" Module

Module		TotalTime	# of Tries
blm1a	Mean	51.7	4.3
	SD	30.3	3.7
	N	59.0	59.0
blm1b	Mean	23.8	2.2
	SD	13.6	1.7
	N	21.0	21.0
blm1c	Mean	22.6	1.9
	SD	10.2	.9
	N	46.0	46.0
blm1d	Mean	46.3	3.5
	SD	30.1	1.6
	N	23.0	23.0
blm1e	Mean	24.1	1.7
	SD	23.1	1.2
	N	12.0	12.0
blm1f	Mean	28.2	2.1
	SD	20.1	1.6
	N	15.0	15.0
blm1g	Mean	57.6	3.4
	SD	78.5	3.7
	N	11.0	11.0
blm1h	Mean	31.3	3.3
	SD	53.2	4.5
	N	4.0	4.0
Total	Mean	37.3	3.0
	SD	32.4	2.7

Figure 3.3

Math Fundamentals: Addition Mean Module Times



Note: The total bar on the far right represents the average time by each individual learner within the entire module.

Figure 3.4

Number of Students Mastering Math Fundamentals: Addition Module

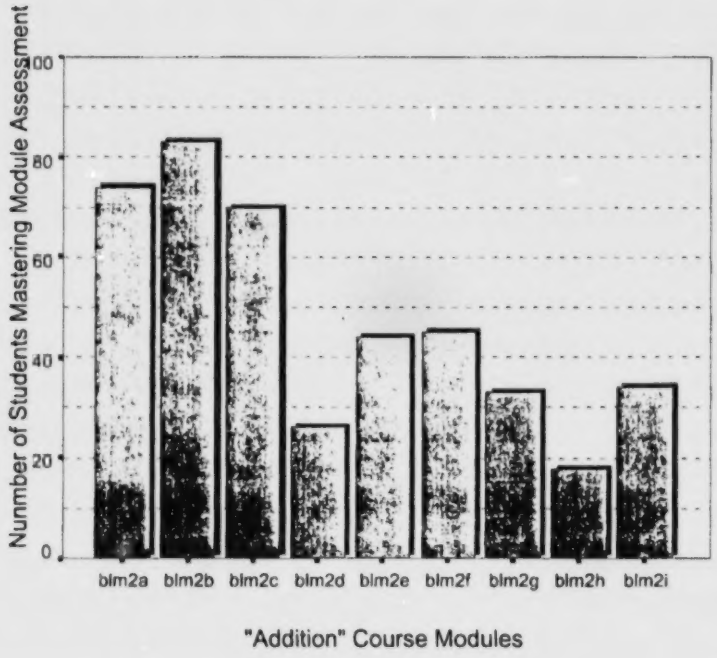


Table 3.2

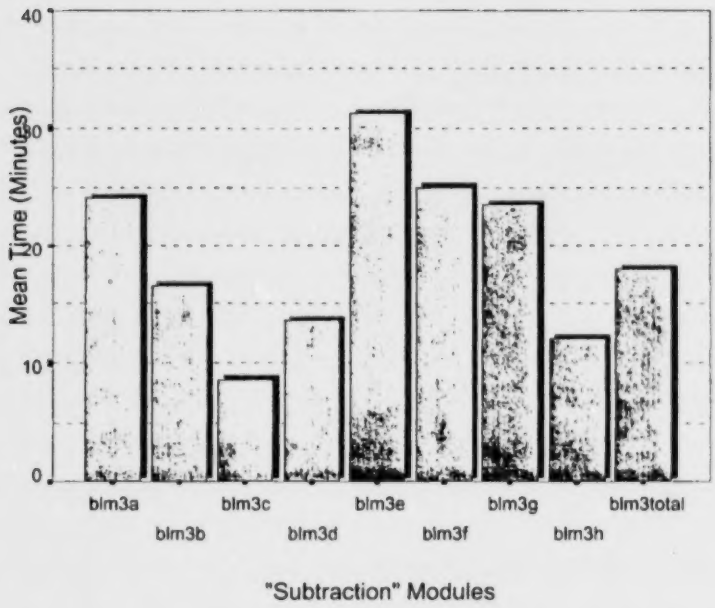
Total Time (Minutes) and Number of Tries for Students Mastering Each Math Fundamentals: Addition Module

Total Time and Number of Tries for Students Mastering Each "Addition" Module

Module		TotalTime	# of Tries
blm2a	Mean	35.9	3.2
	SD	30.1	2.3
	N	74.0	74.0
blm2b	Mean	42.2	3.8
	SD	40.8	3.7
	N	83.0	83.0
blm2c	Mean	39.4	3.2
	SD	44.3	3.1
	N	70.0	70.0
blm2d	Mean	40.4	5.2
	SD	27.9	5.4
	N	26.0	26.0
blm2e	Mean	26.1	2.2
	SD	24.5	1.4
	N	44.0	44.0
blm2f	Mean	21.4	2.1
	SD	20.9	1.6
	N	45.0	45.0
blm2g	Mean	24.9	3.3
	SD	23.2	3.1
	N	33.0	33.0
blm2h	Mean	42.9	3.1
	SD	33.9	3.0
	N	18.0	18.0
blm2i	Mean	63.7	5.2
	SD	33.0	2.5
	N	34.0	34.0
Total	Mean	37.1	3.4
	SD	35.1	3.1

Figure 3.5

Math Fundamentals: Subtraction Mean Module Times



Note: The total bar on the far right represents the average time by each individual learner within the entire module.

Figure 3.6

Number of Students Mastering Math Fundamentals: Subtraction Module

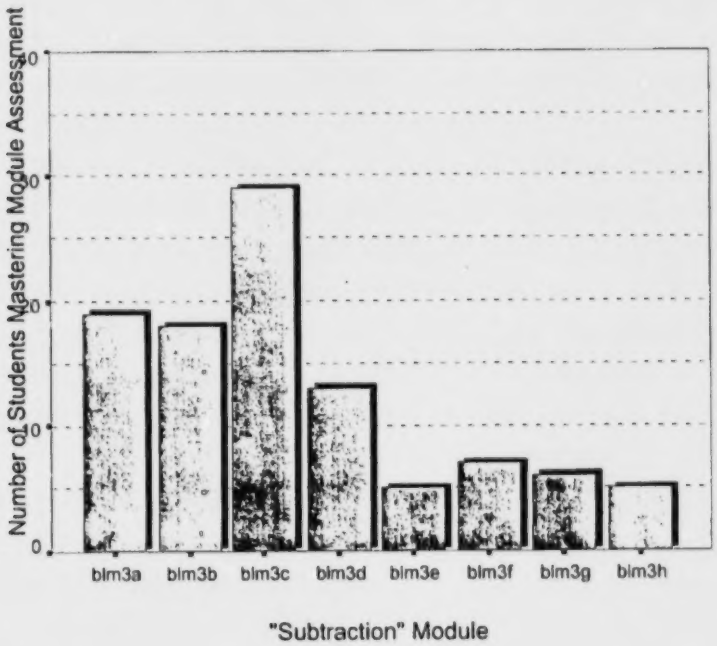


Table 3.3

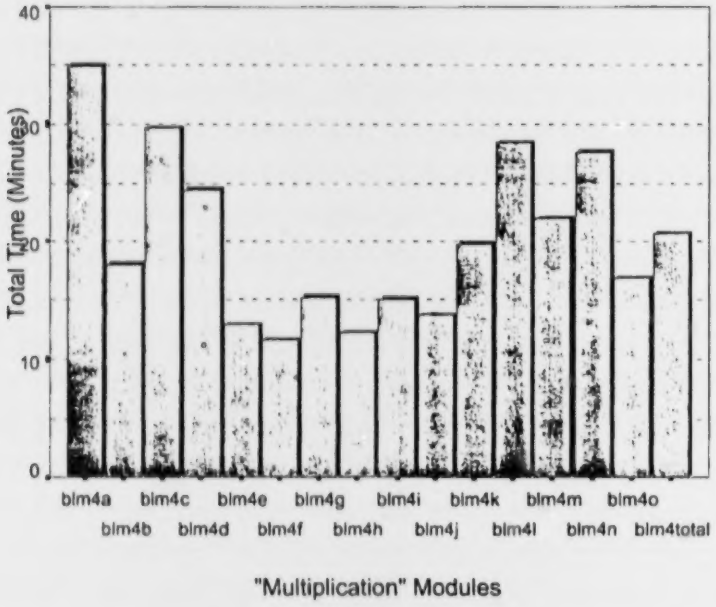
Total Time (Minutes) and Number of Tries for Students Mastering Each Math Fundamentals: Subtraction Module

Total Time and Number of Tries for Students Mastering Each "Subtraction" Module

Module		TotalTime	# of Tries
bim3a	Mean	36.3	3.2
	SD	25.2	1.8
	N	19.0	19.0
bim3b	Mean	23.1	2.1
	SD	17.4	1.7
	N	18.0	18.0
bim3c	Mean	16.3	1.7
	SD	13.4	.9
	N	29.0	29.0
bim3d	Mean	20.2	1.7
	SD	19.7	1.0
	N	13.0	13.0
bim3e	Mean	44.8	2.8
	SD	39.9	1.8
	N	5.0	5.0
bim3f	Mean	46.3	3.6
	SD	47.0	2.6
	N	7.0	7.0
bim3g	Mean	56.3	3.3
	SD	36.0	1.6
	N	6.0	6.0
bim3h	Mean	24.2	1.6
	SD	39.0	1.3
	N	5.0	5.0
Total	Mean	27.9	2.3
	SD	27.0	1.6

Figure 3.7

Math Fundamentals: Multiplication Mean Module Times



Note: The total bar on the far right represents the average time by each individual learner within the entire module.

Figure 3.8

Number of Students Mastering Math Fundamentals: Multiplication Module

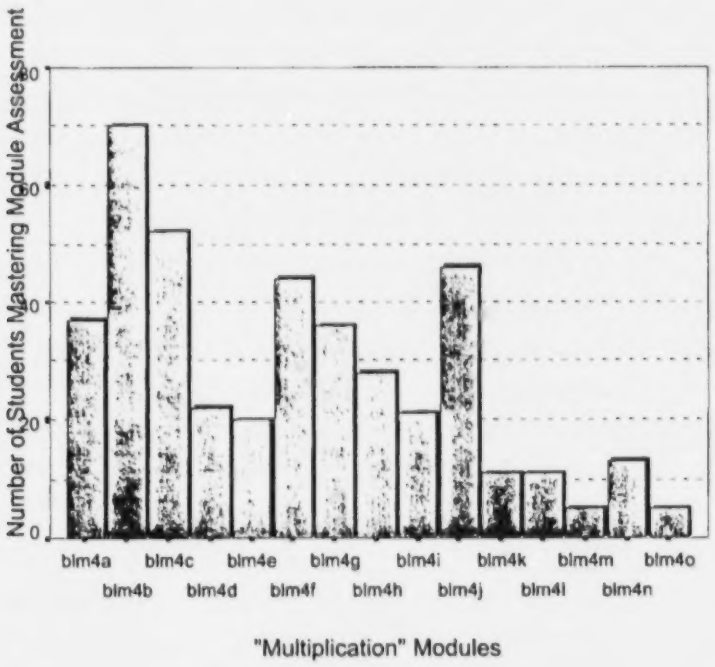


Table 3.4

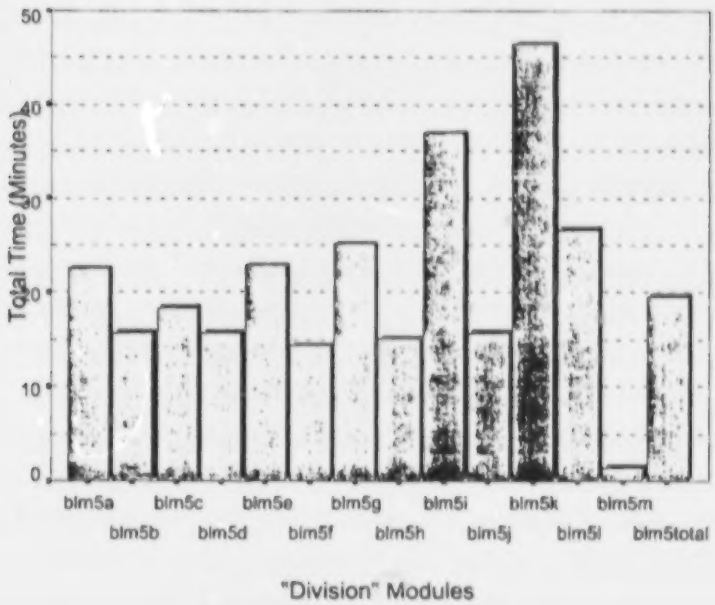
Total Time (Minutes) and Number of Tries for Students Mastering Each Math Fundamentals: Multiplication Module

Total Time and Number of Tries for Students Mastering Each "Multiplication" Module

Module		TotalTime	# of Tries
blm4a	Mean	45.8	3.9
	SD	35.3	3.0
	N	37.0	37.0
blm4b	Mean	32.8	3.4
	SD	31.5	3.3
	N	70.0	70.0
blm4c	Mean	37.4	3.3
	SD	34.7	2.9
	N	52.0	52.0
blm4d	Mean	34.4	2.9
	SD	31.3	1.9
	N	22.0	22.0
blm4e	Mean	29.7	3.5
	SD	23.5	2.3
	N	20.0	20.0
blm4f	Mean	19.5	2.2
	SD	18.5	1.5
	N	44.0	44.0
blm4g	Mean	22.1	2.6
	SD	18.2	3.1
	N	36.0	36.0
blm4h	Mean	23.9	2.1
	SD	21.7	1.6
	N	28.0	28.0
blm4i	Mean	18.7	1.8
	SD	13.8	1.0
	N	21.0	21.0
blm4j	Mean	17.4	2.0
	SD	12.0	1.6
	N	46.0	46.0
blm4k	Mean	44.9	2.8
	SD	43.4	2.7
	N	11.0	11.0
blm4l	Mean	47.8	3.6
	SD	40.8	3.2
	N	11.0	11.0
blm4m	Mean	76.2	5.6
	SD	63.4	3.8
	N	5.0	5.0
blm4n	Mean	63.9	4.3
	SD	39.0	2.3
	N	13.0	13.0
blm4o	Mean	70.2	3.8
	SD	66.0	2.9
	N	5.0	5.0
Total	Mean	31.8	2.9
	SD	31.3	2.6

Figure 3.9

Math Fundamentals: Division Mean Module Times



Note: The total bar on the far right represents the average time by each individual learner within the entire module.

Figure 3.10

Number of Students Mastering Math Fundamentals: Division Module

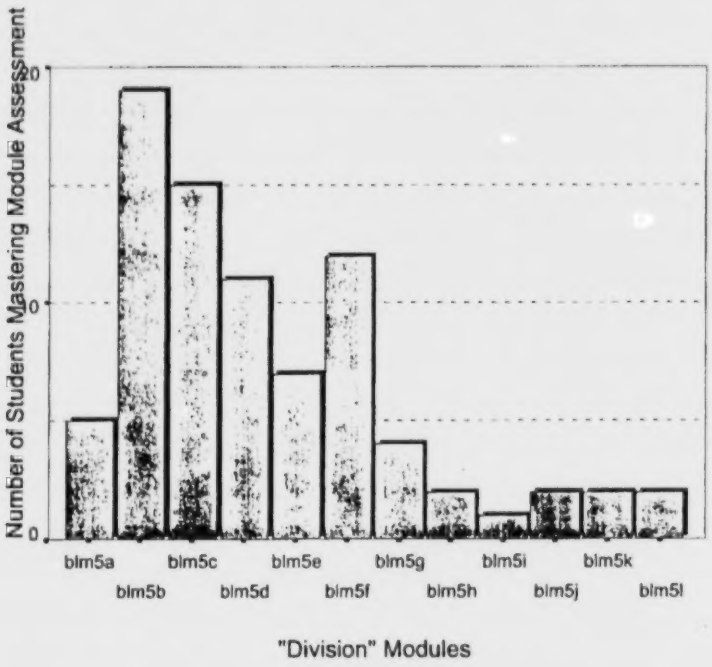


Table 3.5

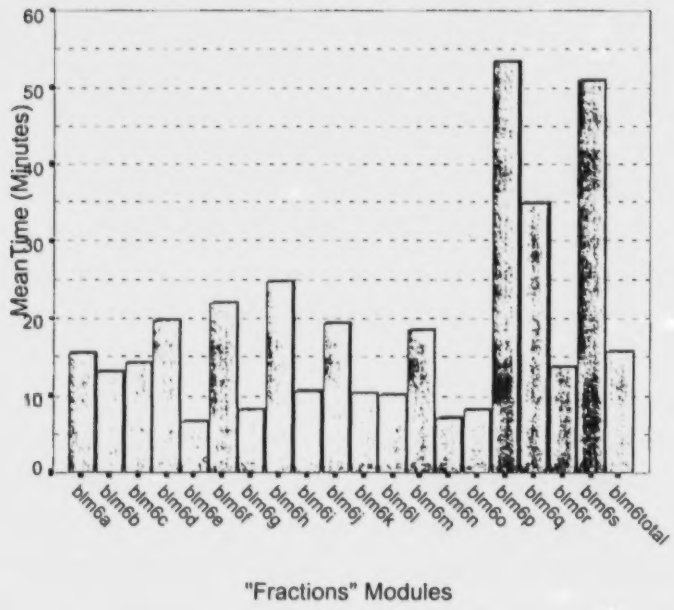
Total Time (Minutes) and Number of Tries for Students Mastering Each Math Fundamentals: Division Module

Total Time and Number of Tries for Students Mastering Each "Division" Module

Module		TotalTime	# of Tries
blm5a	Mean	25.6	2.0
	SD	22.7	1.2
	N	5.0	5.0
blm5b	Mean	20.4	1.7
	SD	14.6	.9
	N	19.0	19.0
blm5c	Mean	31.1	3.0
	SD	35.4	3.5
	N	15.0	15.0
blm5d	Mean	26.1	2.4
	SD	17.8	1.6
	N	11.0	11.0
blm5e	Mean	33.4	3.3
	SD	27.5	3.6
	N	7.0	7.0
blm5f	Mean	23.0	2.2
	SD	11.5	1.0
	N	12.0	12.0
blm5g	Mean	42.3	2.5
	SD	57.2	1.7
	N	4.0	4.0
blm5h	Mean	25.5	3.5
	SD	9.2	.7
	N	2.0	2.0
blm5i	Mean	4.0	1.0
	SD	.	.
	N	1.0	1.0
blm5j	Mean	65.0	5.0
	SD	66.5	5.7
	N	2.0	2.0
blm5k	Mean	13.5	1.0
	SD	.7	.0
	N	2.0	2.0
blm5l	Mean	89.5	5.5
	SD	89.8	4.9
	N	2.0	2.0
Total	Mean	28.5	2.5
	SD	29.2	2.3

Figure 3.11

Math Fundamentals: Fractions Mean Module Times



Note: The total bar on the far right represents the average time by each individual learner within the entire module.

Figure 3.12

Number of Students Mastering Math Fundamentals: Fractions Module

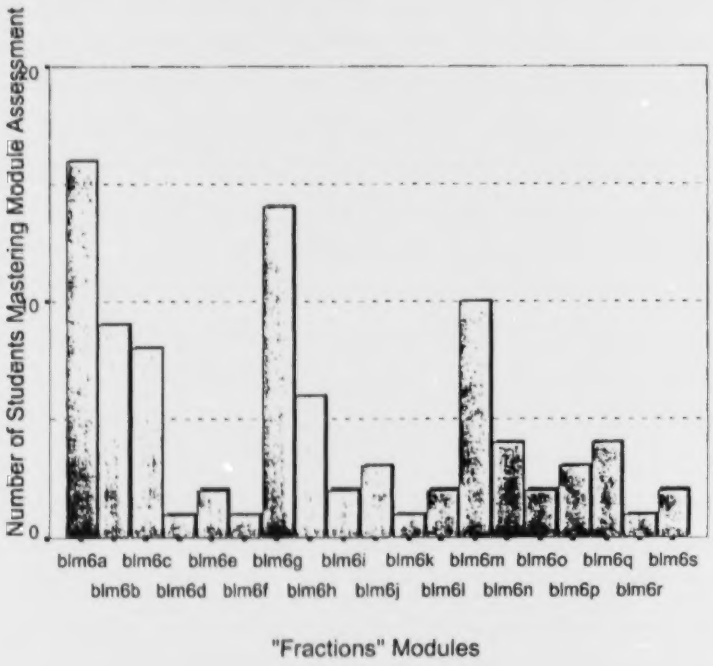

Number of Students Mastering Module Assessment
20
0
0
bim6a bim6c bim6e bim6g bim6i bim6k bim6m bim6o bim6q bim6s
bim6b bim6d bim6f bim6h bim6j bim6l bim6n bim6p bim6r
"Fractions" Modules

Table 3.6

Total Time (Minutes) and Number of Tries for Students Mastering Each Math Fundamentals: Fractions Module

Total Time and Number of Tries for Students Mastering Each "Fractions" Module

Module		TotalTime	# of Tries
blm6a	Mean	31.9	2.4
	SD	15.8	1.7
	N	16.0	16.0
blm6b	Mean	26.4	1.8
	SD	23.6	1.3
	N	9.0	9.0
blm6c	Mean	25.1	2.1
	SD	21.7	1.0
	N	8.0	8.0
blm6d	Mean	128.0	7.0
	SD	.	.
	N	1.0	1.0
blm6e	Mean	38.5	3.0
	SD	19.1	2.8
	N	2.0	2.0
blm6f	Mean	23.0	3.0
	SD	.	.
	N	1.0	1.0
blm6g	Mean	14.5	1.9
	SD	8.1	1.1
	N	14.0	14.0
blm6h	Mean	33.7	1.7
	SD	28.0	.8
	N	6.0	6.0
blm6i	Mean	24.5	1.5
	SD	24.7	.7
	N	2.0	2.0
blm6j	Mean	24.3	2.0
	SD	18.8	1.0
	N	3.0	3.0
blm6k	Mean	39.0	2.0
	SD	.	.
	N	1.0	1.0
blm6l	Mean	34.5	2.5
	SD	24.7	.7
	N	2.0	2.0
blm6m	Mean	38.7	3.3
	SD	23.6	1.7
	N	10.0	10.0
blm6n	Mean	13.0	1.5
	SD	8.4	.6
	N	4.0	4.0
blm6o	Mean	30.5	3.5
	SD	40.3	3.5
	N	2.0	2.0
blm6p	Mean	98.3	6.3
	SD	59.5	2.5
	N	3.0	3.0
blm6q	Mean	42.8	2.3
	SD	50.4	1.0
	N	4.0	4.0
blm6r	Mean	14.0	2.0
	SD	.	.
	N	1.0	1.0
blm6s	Mean	87.5	6.5
	SD	67.2	2.1
	N	2.0	2.0
Total	Mean	32.6	2.5
	SD	30.1	1.8

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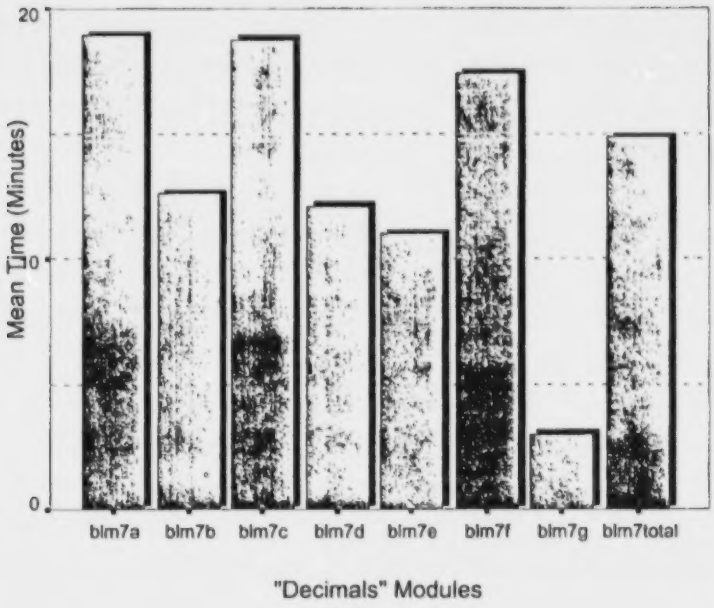
Figure 3.13

Math Fundamentals: Decimals Mean Module Times



Note: The total bar on the far right represents the average time by each individual learner within the entire module.

Figure 3.14

Number of Students Mastering Math Fundamentals: Decimals Module

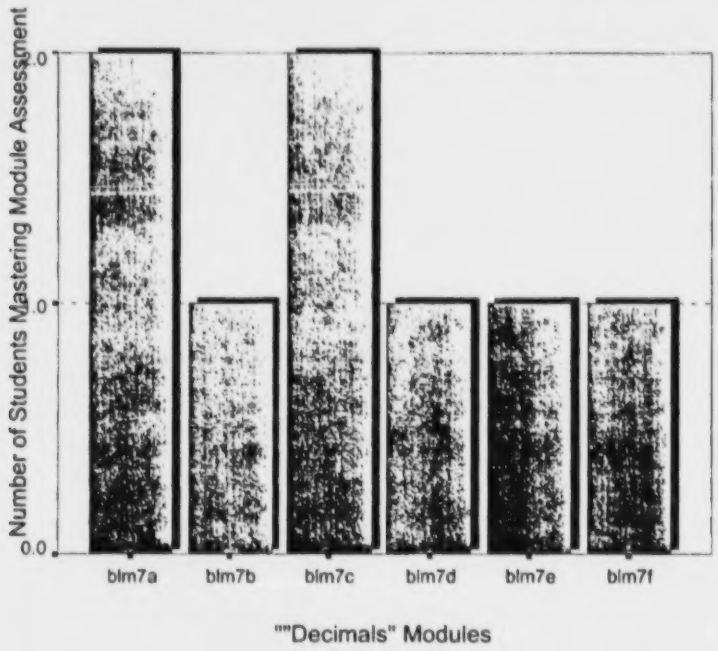


Table 3.7

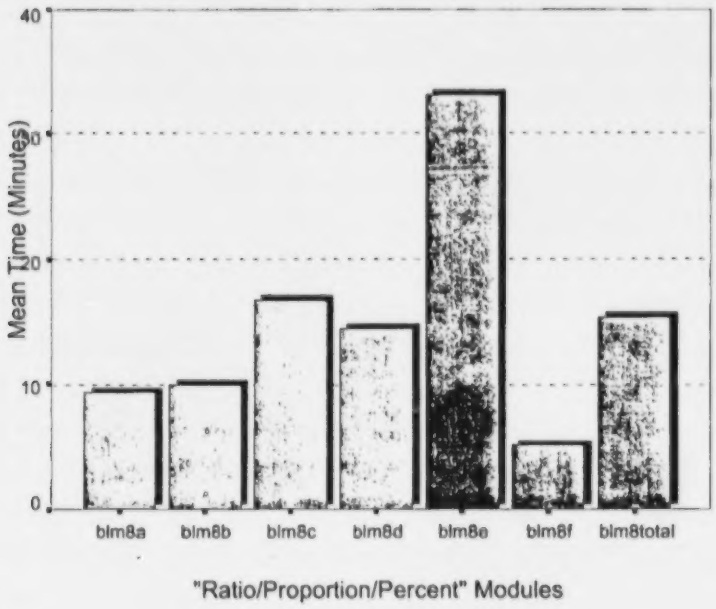
Total Time (Minutes) and Number of Tries for Students Mastering Each Math Fundamentals: Decimals Module

Total Time and Number of Tries for Students Mastering Each "Decimals" Module

Module		TotalTime	# of Tries
blm7a	Mean	71.0	4.5
	SD	5.7	.7
	N	2.0	2.0
blm7b	Mean	33.0	3.0
	SD	.	.
	N	1.0	1.0
blm7c	Mean	38.0	2.5
	SD	12.7	.7
	N	2.0	2.0
blm7d	Mean	4.0	1.0
	SD	.	.
	N	1.0	1.0
blm7e	Mean	23.0	1.0
	SD	.	.
	N	1.0	1.0
blm7f	Mean	40.0	3.0
	SD	.	.
	N	1.0	1.0
Total	Mean	39.8	2.8
	SD	23.2	1.4

Figure 3.15

Math Fundamentals: Ratio/Proportion/Percent Mean Module Times



Note: The total bar on the far right represents the average time by each individual learner within the entire module.

Figure 3.16

Number of Students Mastering Math Fundamentals: Ratio/Proportion/Percent Module

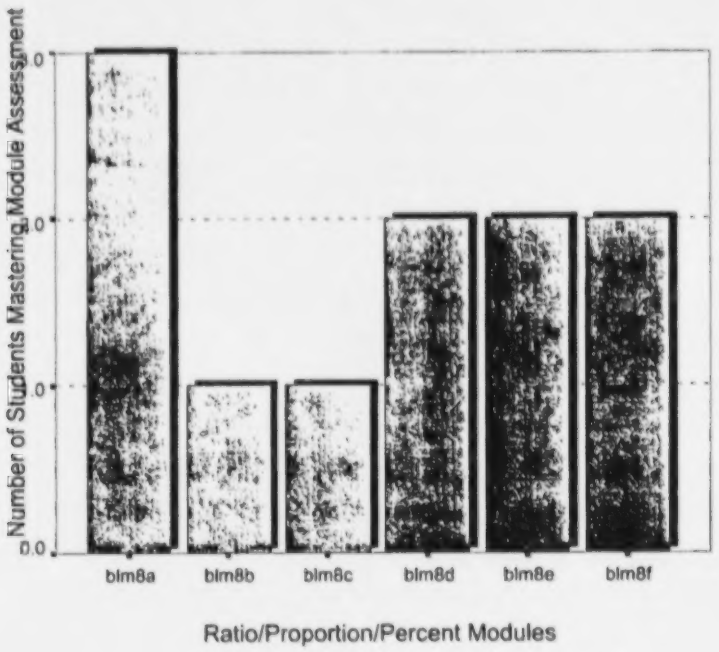


Table 3.8

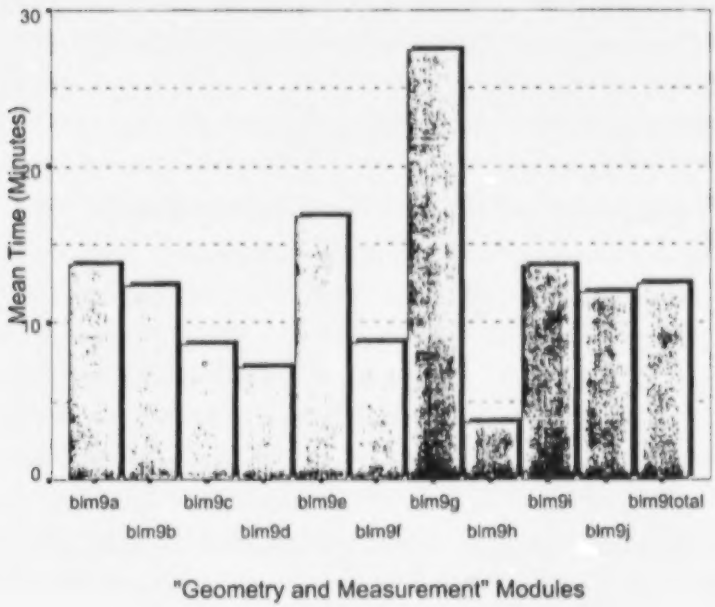
Total Time (Minutes) and Number of Tries for Students Mastering Each Math Fundamentals: Ratio/Proportion/Percent Module

Total Time and Number of Tries for Students Mastering Each "Ratio/Proportion/Percent" Module

Module		TotalTime	# of Tries
blm8a	Mean	23.0	1.3
	SD	26.9	.6
	N	3.0	3.0
blm8b	Mean	24.0	1.0
	SD	.	.
	N	1.0	1.0
blm8c	Mean	15.0	2.0
	SD	.	.
	N	1.0	1.0
blm8d	Mean	28.5	2.0
	SD	3.5	.0
	N	2.0	2.0
blm8e	Mean	63.0	3.5
	SD	49.5	2.1
	N	2.0	2.0
blm8f	Mean	12.0	1.0
	SD	1.4	.0
	N	2.0	2.0
Total	Mean	28.6	1.8
	SD	26.7	1.2

Figure 3.17

Math Fundamentals: Geometry and Measurement Mean Module Times



Note: The total bar on the far right represents the average time by each individual learner within the entire module.

Figure 3.18

Number of Students Mastering Math Fundamentals: Geometry and Measurement Module

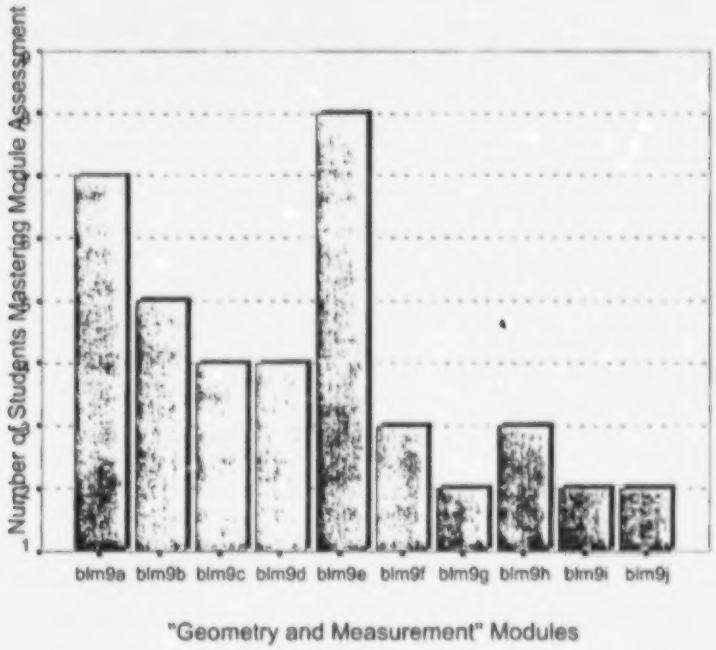


Table 3.9

Total Time (Minutes) and Number of Tries for Students Mastering Each Math Fundamentals: Geometry and Measurement Module

Total Time and Number of Tries for Students Mastering Each "Geometry and Measurement" Module

Module		TotalTime	# of Tries
blm9a	Mean	27.1	2.0
	SD	18.3	1.3
	N	7.0	7.0
blm9b	Mean	29.2	2.0
	SD	13.2	1.0
	N	5.0	5.0
blm9c	Mean	24.5	2.0
	SD	20.2	1.4
	N	4.0	4.0
blm9d	Mean	19.8	1.8
	SD	17.9	1.0
	N	4.0	4.0
blm9e	Mean	28.6	3.1
	SD	15.0	3.3
	N	8.0	8.0
blm9f	Mean	19.3	2.0
	SD	11.2	1.7
	N	3.0	3.0
blm9g	Mean	67.0	8.5
	SD	14.1	7.8
	N	2.0	2.0
blm9h	Mean	10.3	1.0
	SD	11.4	.0
	N	3.0	3.0
blm9i	Mean	53.5	4.5
	SD	29.0	.7
	N	2.0	2.0
blm9j	Mean	11.5	1.0
	SD	2.1	.0
	N	2.0	2.0
Total	Mean	27.4	2.5
	SD	19.2	2.6

Reading 1 Data Analysis

In addition to the Reading Horizons reading curriculum, a number of learners also participated in the Reading 1 curriculum. The average amount of time spent by those learners mastering each course within the Reading 1 curriculum is displayed in Figure 4.1. The number of learners mastering each course is displayed in Figure 4.2. Additionally, the number of attempts per learner mastering each course is reported in Table 4.1. These data indicate that 12 (6.6%) out of 181 learners mastered the *blra1.1-Making New Words, Part 1* course (see Figure 4.3), they averaged 170.8 minutes within the course, and attempted an average 2.9 tries at mastering the course assessment. Five (6.8%) out of 78 learners mastered the *blra1.2-Making New Words, Part 2* course (see figure 4.4), they averaged 60.6 minutes within the course, and attempted an average 1.6 tries at mastering the course assessment. Four (7.1%) out of 56 learners mastered the *blra2.1-Understanding New Words, Part 1* course (see figure 4.5), they averaged 27.8 minutes within the course, and attempted an average of 1.0 tries at mastering the course assessment. Eight (21.6%) out of 37 learners mastered the *blra2.2-Understanding New Words, Part 2* course (see Figure 4.6), they averaged 39.0 minutes within the course, and attempted an average of 1.6 tries at mastering the course assessment. Four (8.7%) out of 46 learners mastered the *blra3.1-Understanding What You Read, Part 1* course (see Figure 4.7), they averaged 61.3 minutes within the course, and attempted an average 2.0 tries at mastering the course assessment. Four (13.3%) out of 30 learners mastered the *blra3.2-Understanding What You Read, Part 2* course (see Figure 4.8), they averaged 49.8 minutes within the course, and attempted an average 2.0 tries at mastering the course assessment. Four (13.8%) out of 29 learners mastered the *blra4.1-Thinking About What You Read, Part 1* course (see Figure 4.9), they averaged 27.5 minutes within the course, and attempted an average 1.3 tries at mastering the course assessment. Four (15.4%) out of 26 learners mastered the *blra4.2-Thinking About What You Read, Part 2* course (see Figure 4.10), they averaged 17.0 minutes within the course, and attempted an average 1.3 tries at mastering the course assessment. Finally, Three (6.7%) out of 45 learners mastered the *blra5-Judging What You Read* course (see Figure 4.11), they averaged 37.0 minutes within the course, and attempted an average 2.0 tries at mastering the course assessment. The average amount of time spent within the Reading 1 curriculum by any student mastering at least one course was 40.5 minutes (see Table 4.1).

Figure 4.1

Reading 1 Mean Times for Learners Mastering Courses

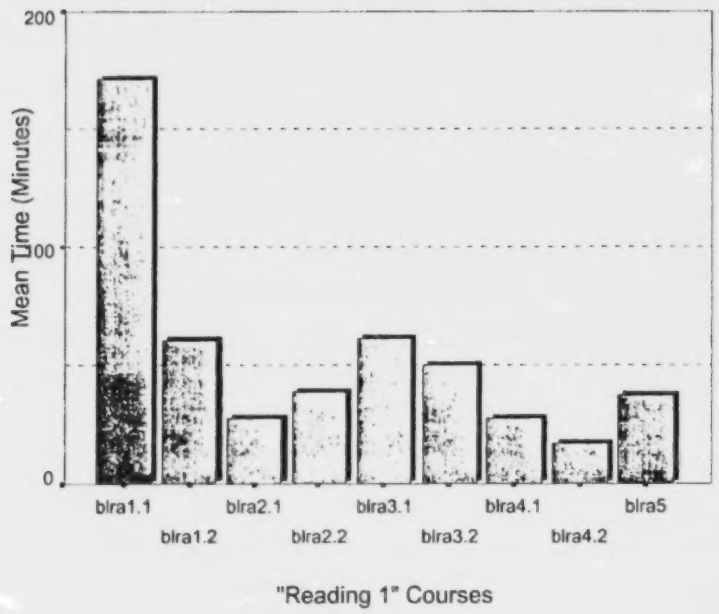


Figure 4.2

Number of Students Mastering Reading 1 Courses

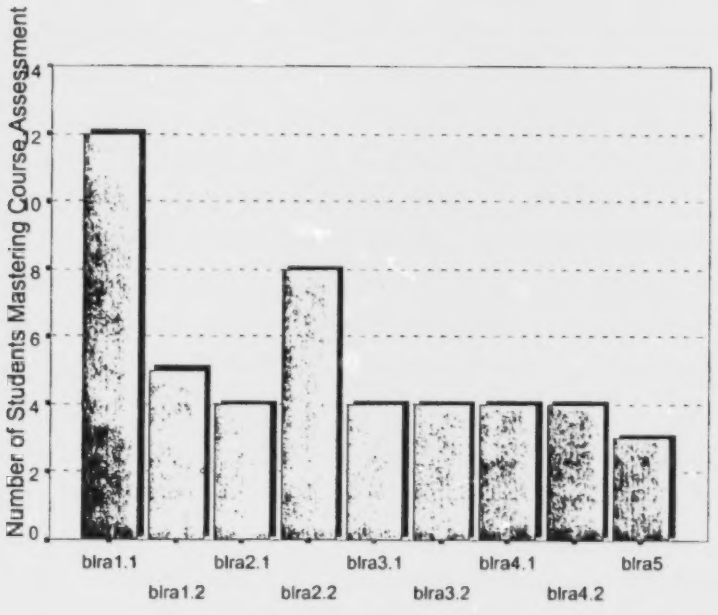


Table 4.1

Total Time (Minutes) and Number of Tries for Students Mastering Each Reading 1 Course

Total Time and Number of Tries for Students Mastering Each "Reading 1" Course

Course		Total Time	# of Tries
blra1.1	Mean	170.8	2.9
	SD	237.3	2.2
	N	12.0	12.0
blra1.2	Mean	60.6	1.6
	SD	97.4	.5
	N	5.0	5.0
blra2.1	Mean	27.8	1.0
	SD	20.1	.0
	N	4.0	4.0
blra2.2	Mean	39.0	1.6
	SD	48.8	.9
	N	8.0	8.0
blra3.1	Mean	61.3	2.0
	SD	34.6	1.4
	N	4.0	4.0
blra3.2	Mean	49.8	2.0
	SD	27.5	.8
	N	4.0	4.0
blra4.1	Mean	27.5	1.3
	SD	6.2	.5
	N	4.0	4.0
blra4.2	Mean	17.0	1.3
	SD	13.3	.5
	N	4.0	4.0
blra5	Mean	37.0	2.0
	SD	16.5	.0
	N	3.0	3.0
Total	Mean	73.1	1.9
	SD	133.9	1.4

Figure 4.3

Number of Students Mastering Versus Total Number of Students Participating in Reading 1 Module blra1.1: Making New Words, Part 1

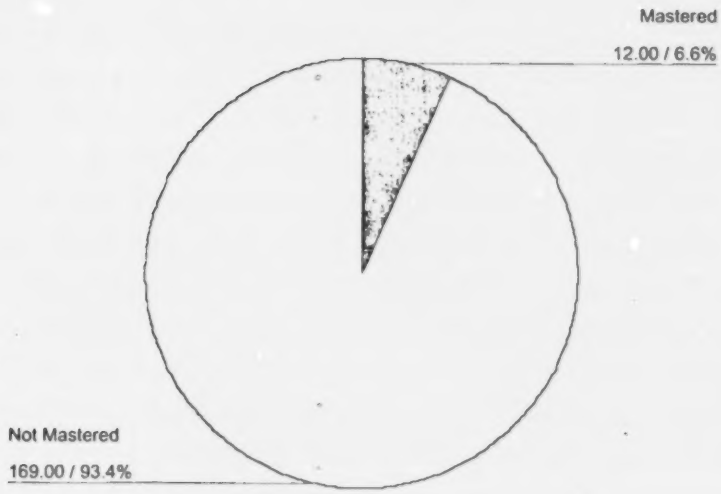


Figure 4.4

Number of Students Mastering Versus Total Number of Students Participating in Reading 1 Module blra1.2: Making New Words, Part 2

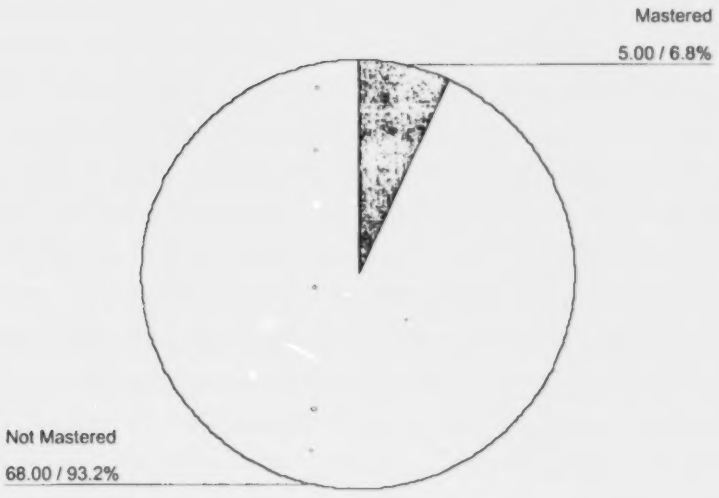


Figure 4.5

Number of Students Mastering Versus Total Number of Students Participating in Reading 1 Module blra2.1: Understanding New Words, Part 1

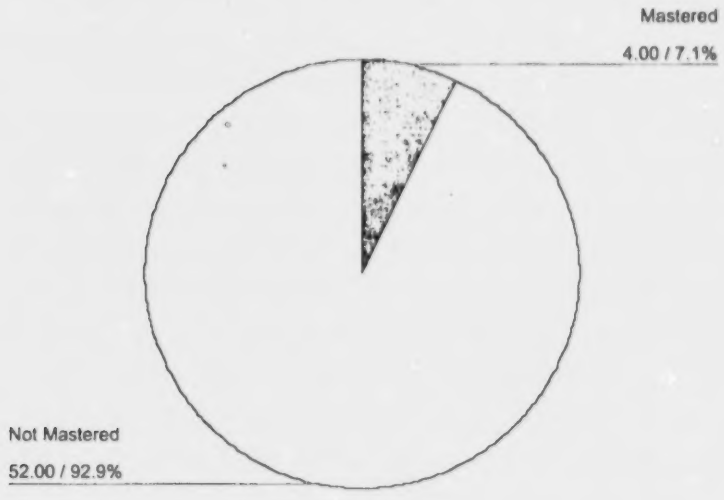


Figure 4.6

Number of Students Mastering Versus Total Number of Students Participating in Reading 1 Module blra2.2: Understanding New Words, Part 2

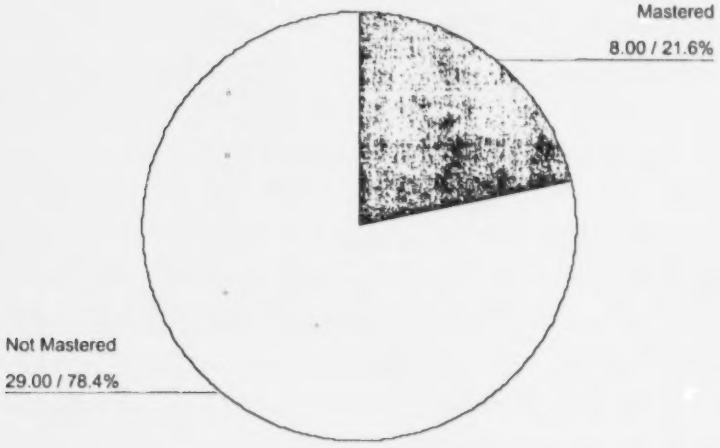


Figure 4.7

Number of Students Mastering Versus Total Number of Students Participating in Reading 1 Module blra3.1: Understanding What You Read, Part 1

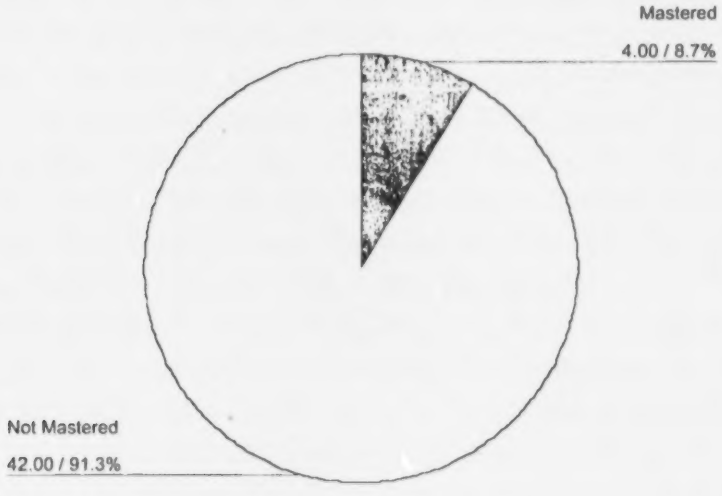


Figure 4.8

Number of Students Mastering Versus Total Number of Students Participating in Reading 1 Module blra3.2: Understanding What You Read, Part 2

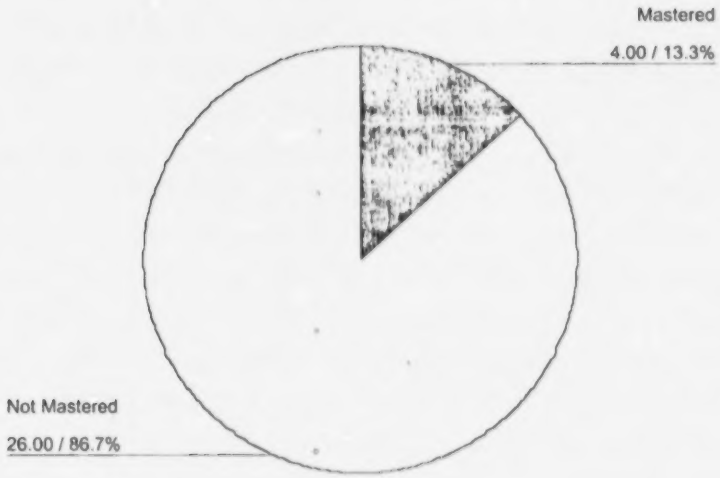


Figure 4.9

Number of Students Mastering Versus Total Number of Students Participating in Reading 1 Module blra4.1: Thinking About What You Read, Part 1

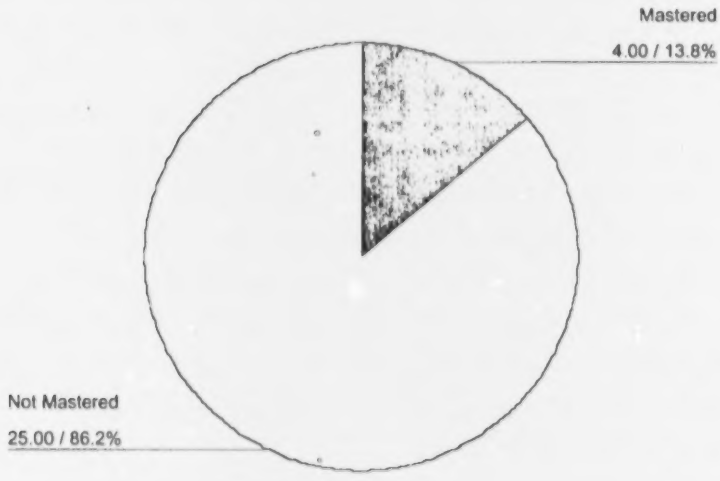


Figure 4.10

Number of Students Mastering Versus Total Number of Students Participating in Reading 1 Module blra4.2: Thinking About What You Read, Part 2

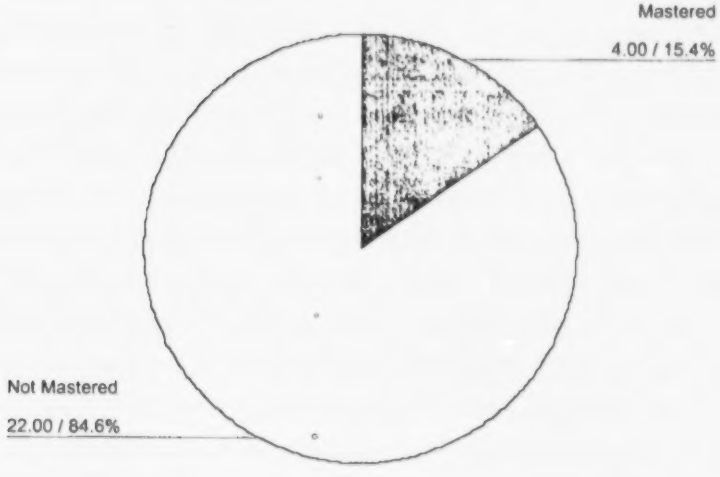
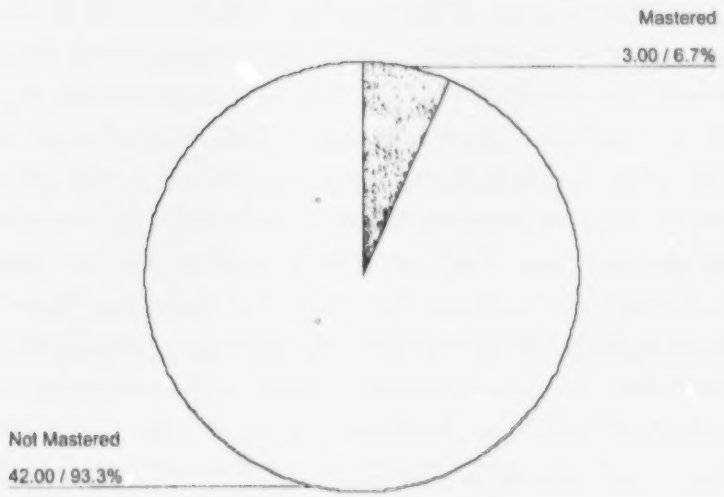


Figure 4.11

Number of Students Mastering Versus Total Number of Students Participating in Reading 1 Module blra5: Judging What You Read



Instructor Survey Data Tabulation

Attitude surveys were distributed to the four instructors during November, 1997. Their responses to each survey item are reported in table format below. The total number of responses per attitude item have been tabulated and are reported within each response type column. The instructors have been labeled A through D for the purpose of reporting their short answers to the open-ended questions.

Instructor Attitudes Part I: General Information and Likert-type Scale Survey Items

Class Using PLATO: Mainly K-8, some high school and a few adults

PLATO Curricula Used: All, mainly Reading Horizons and Math

How Many Months Using Any Computer Teaching: A: 18, B: 24+, C: 18, D: 24-30

Note: Instructors were directed to use the following key for each survey item:

SA	if you strongly agree
A	if you agree
N	if you neither agree nor disagree
D	if you disagree
SD	if you strongly disagree

Question		SA	A	N	D	SD
1	The PLATO course content includes what my students need to learn about the topics taught.	4				
2	The PLATO course objectives correspond to those for my course.	NA	NA	NA	NA	NA
3	The PLATO course content corresponds to the content of the standard end-of-course test we use.	NA	NA	NA	NA	NA
4	Content seemed generally free of errors and inaccuracies.	1	2	1		
5	Content was generally up-to-date.	1	3			

		SA	A	N	D	SD
6	Quality and style of instruction was consistent throughout the curriculum.	2	1	1		
7	Students generally understood the explanations.		4			
8	There was adequate depth in exercises and tests.	1	3			
9	Tests, application/drill lessons, and tutorials corresponded to the objectives in the Instructor Guides.	2	1			
10	Tutorials involved the students through frequent questions, answers and feedback, rather than just reading.	2	2			
11	Software was generally free of bugs and errors.	1	3			
12	All courseware used consistent keystrokes and display style.	2	2			
13	Color was used appropriately.	2	2			
14	Graphics were used appropriately.	2	2			
15	Screens were consistently readable.	3	1			
16	I was able to use student progress reports to identify students needing my attention.	1	2	1		
17	I was able to spend time in one-on-one tutoring and counseling while students used PLATO.	1	3			
18	I was able to make appropriate individual student assignments on the system.	1	3			
19	My students rarely seemed confused or "trapped" by the system.		3	1		
20	My students respond well to the PLATO system.	2	2			
21	I find working with the computer is generally a productive, rather than frustrating, experience.	3	1			
22	I enjoy working with the PLATO computer system.	4				
23	The PLATO system plays a useful role in my teaching.	2	1	1		
24	I was adequately trained to operate the PLATO system.	2	2			
25	I would like more training on how to use PLATO to best advantage in my teaching.	2	0	2		

Instructor Attitudes Part II: Verbatim Responses to Open-Ended Questions

1. What do you like best about teaching with the PLATO computer?

A: I think the best thing is that the lessons give a lot of examples before the questions are asked.

B. The program seems to be user friendly and that makes it easier for students to feel comfortable with utilizing the courseware.

C. We are not a school environment but more a one-on-one, learn-at-your-own-pace. PLATO allows us this freedom.

D: Individual capabilities. Ease of use for students. Allows us instructors to, at the least, spend time addressing individual needs while keeping the entire class moving.

2. What do you like least about teaching with the PLATO computer?

A: I feel that all the lessons should have audio. I found out a lot of children can do the work but not understand the directions unless they are read to them.

B: Not enough HELP screens for certain courseware-such as the Math Steps, etc.

C: When Reading Horizons freezes (locks up) or many other problems with Reading Horizons as it is hard to get someone who knows what to do.

D: We need expanded lower-level curricula as we have many students at that level who need the additional work, structure, and encouragement.

3. How would you change the PLATO lessons?

A: I would add audio to all of them. I would not make assessments such a long lesson.

B: I would add some additional courseware such as Spelling, World History etc.

C: I would have a review of the missed mastery test questions, to show what was missed and why (how to get the correct answer).

D: Expanded drill/tutorial sections in mid-elementary levels (~grades 3-5). More gamesy curricula for preK-2 level. Some newer graphics updates.

4. What suggestions do you have to improve the way you use the PLATO system?

A: I wish the system would keep attendance.

B: Update as much as possible the graphics.

C: The children have, at various times, asked why they couldn t review the missed questions and see the correct answers on the mastery test.

D: Better use (on our part) of staff training opportunities so as to be better able to utilize the system features.

5. What other comments or suggestions do you have on the PLATO system or this course?

C: I would like to be able to get a list from a beginning date and an end date letting me know the total days (hrs) spent on PLATO. An attendance list.

D: Easier access of CD-ROM on our system. Some new posters for classrooms. More hotline reps at key times.

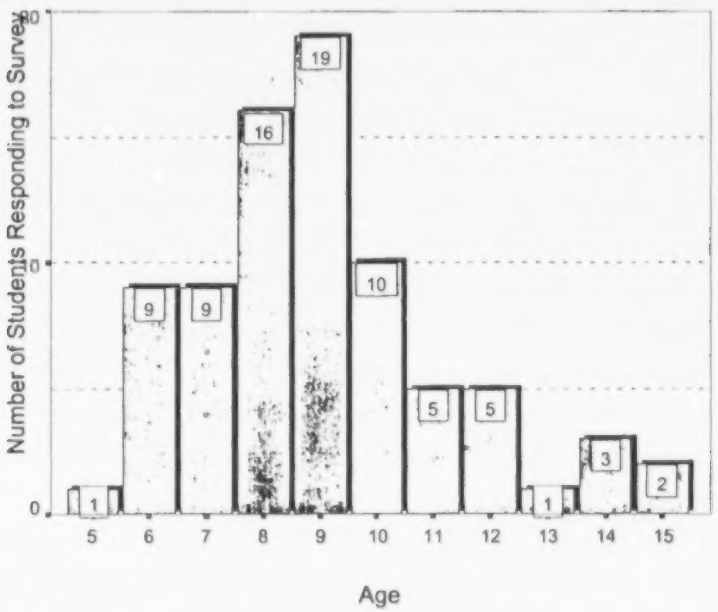
Learner Attitudes
Part I: General Information and Likert-type Scale Survey Items

An attitude survey was administered to selected learners throughout November and early December, 1997. These learners were regular participants of PLATO lessons during the evaluation period. In many cases, the survey was administered orally, with the instructors helping the respondents understand the meaning of some of the items.

A total of 83 learners were surveyed. The age of the learners (respondents) ranged from 5 — 15-years old, with an average age of 9.10 years, SD=2.21. Figure 5.1 displays the range and distribution of the various ages of the respondents.

Table 5.1 reports the frequency distribution and mean for each of the Likert-type scale survey items.

Figure 5.1 Age of Survey Respondents



Notes: N = 83
Mean = 9.10 Years
SD = 2.21

Table 5.1 Likert-type Survey Responses

The following rating scale was used by the respondents:

SA if you **strongly agree**
A if you **agree**
N if you **neither agree nor disagree**
D if you **disagree**
SD if you **strongly disagree**

Question		SA (5)	A (4)	N (3)	D (2)	SD (1)	N	Mean (SD)
1.	I am able to sign on to the computer without problems.	47	31	3	2		83	4.48 (.69)
2.	Getting to my lesson is easy.	34	35	2	10	2	83	4.07 (1.07)
3.	The computer is easy to use.	43	36	1	3		83	4.43 (.70)
4.	I can start and stop a lesson whenever I want.	15	30	14	16	8	83	3.34 (1.25)
5.	The computer lets me do something (like answer questions) often and not mainly just watch.	27	47	5	3		82	4.20 (.71)
6.	I usually can understand what the computer teaches me, without help from my instructor.	26	41	9	6	1	83	4.02 (.91)
7.	The computer gives me help when I need it.	26	49	2	5		82	4.17 (.75)
8.	I can work at my own pace on the computer.	29	39	5	8		81	4.10 (.90)
9.	I feel I'm studying what I need to on the computer.	36	42			1	79	4.42 (.63)
10.	The lessons on the computer are designed for people like me.	24	41	9	3	2	79	4.04 (.69)
11.	When I give a wrong answer on the computer, I feel bad about myself.	6	16	8	33	17	80	2.51 (1.24)
12.	I would like more time to study on the computer.	27	41	7	2	3	80	4.09 (.93)

Question		SA (5)	A (4)	N (3)	D (2)	SD (1)	N	Mean (SD)
13.	The computer makes me nervous.	1	13	7	22	38	81	1.98 (1.15)
14.	Working on the computer makes me feel good about myself.	52	27				79	4.66 (.48)
15.	I recommend learning from the computer.	29	39	4	5		77	4.19 (.81)
16.	The computer lessons I work with are interesting.	35	36	5	1	1	78	4.32 (.76)
17.	I try hard to learn from the computer lessons.	33	44	1	1		79	4.38 (.58)
18.	The computer lessons make me feel more confident about doing well in school.	46	32	1			79	4.56 (.57)

Learner Attitudes Part II: Verbatim Responses to Open-Ended Questions

What do you like BEST about learning from the computer?

1. helps with school work
2. helps me learn in school
3. it tells you if you're right or wrong
4. math, games, learning, feeling good
5. the computer helps me learn in school a lot
6. it helps me with my math at school
7. you can learn stuff like math facts and stuff like that
8. helps me with my homework and school work
9. it is kind of like math at school and you would know half of your math at school
10. It helps me with school and lessons. They help me learn how to do my lessons.
11. working on my math
12. I like to learn how to do different things before I learn it at school so that when we do I don't have much trouble learning it
13. the things that I learned on the computer are math, reading, and language
14. the computer gives more of an illustrated picture than the books, the programs follow a sequence in which you review regularly
15. it helps me with my math and school work
16. math game read
17. play games and have fresh fruit to eat. and I learn a lot on math like times.
18. it helps me learn more in class
19. school work
20. I get to go into stuff over my grade because everything else is too easy
21. I like that the computer can help me with my homework
22. it shows how to work out and do the problems
23. it helps me learn to type better and study harder
24. they helped me learn stuff I didn't know
25. I liked the lessons and the games
26. It gets me ahead of the class at school
27. sometimes it helps me do some of my work
28. adding, reading
29. the test
30. math
31. everything
32. math, because it helps in school
33. typing and adding
34. my ABC's
35. math
36. it explains more to me and helps me get A's and B's
37. I like the games and lessons
38. helps me understand more of what I am learning in school

39. helps me understand my school work easier to learn. I like where we can come and type up school essays on the computer.
40. helps me with my math
41. it helps me do my homework
42. finding the vowel
43. subtracting, adding
44. helps me out in school because we do the same stuff
45. math
46. you get stars and you don't have to do it again
47. I don't have a teacher yelling if wrong answer
48. getting to my own work like math
49. games
50. will know how to do the work when I get back to school
51. play games
52. math
53. traveling game
54. doing the math skills
55. I liked doing the addition and subtraction on the computer.
56. playing games
57. games
58. fun
59. doing math
60. pluses
61. math
62. It helps you in school
63. Math
64. Plato
65. It helps me with math. I now get 100% sometimes.
66. playing reading stuff
67. Mostly about math, second about games
68. everything

What do you like LEAST about learning from the computer?

1. getting a score lower than 80
2. I would like more time on the computer
3. some times you can't see the choices and the questions at the same time
4. when you don't think about it and you get an F and not a star
5. I do not have time to learn from the lessons and questions.
6. when I get the wrong answer sometimes
7. When it shows all the pictures of things that I already knew about and it takes awhile.
8. on certain questions the answer you put in is recorded before you press enter so you don't get to check over it, but then that also helps you to be careful and think fast
9. reading
10. not enough time to play

11. sometimes I don't understand something
12. some of the computers freeze
13. more time
14. it doesn't tell you the right answers on the mastery test
15. hard questions
16. I want more time on the computer
17. when they freeze up during a game
18. reading, writing
19. numberline
20. social studies
21. the computer gives you the answer
22. sometimes it messes up
23. math
24. not a lot of time
25. science
26. work
27. doing the science
28. when I don't want to do it
29. baby stuff (phonics)
30. Plato
31. coloring
32. subtraction
33. pluses
34. hard questions and I can't figure them out
35. doing work

How would you change the computer lessons or the way you use them?

1. make it less complicated
2. they help you learn math
3. get new games
4. nothing
5. I would do in school. Because I need help with them.
6. nothing
7. more games
8. I would like to try most of everything and not just the same thing
9. more games
10. I would put little cartoon people in it so it would be more interesting
11. Nothing
12. Play all games and a little lessons
13. more time
14. more games
15. more games
16. nothing

17. You will push F10 to change computer lessons
18. put in more pictures
19. give them more work to do if it was too easy for them
20. making the lessons hard
21. how to get out of a lesson
22. doing another test
23. make them a little easier
24. make it harder
25. do not give us the answer
26. more math
27. longer class time
28. learning the lesson with fun and interesting lesson
29. more games for my age
30. more lessons
31. more games
32. making them a little harder
33. go faster

What other suggestions do you have to improve any part of this course?

1. have more time on lessons
2. more games
3. I really like and try to get to computer as best I can because I really really like it
4. harder programs
5. make tutorials short
6. tell the right answers on the mastery tests
7. more computer lessons for little kids
8. the computer is also fun it has games and work for you to do
9. more games, if you get a wrong answer don't skip it but give right answer
10. more games would improve my imagination
11. more time in computer class

Conclusions and Discussion

In the Stark Metro program, the PLATO system is used informally, primarily to help supplement and support the learning of basic reading and math skills. The structure of the Stark Metro program makes it difficult to determine through testing exactly what kind of impact the PLATO system has had on the academic success of those students who have regularly participated. In the PLATO system, demonstrating mastery of a module requires passing a mastery test. However, the instructors do not regularly urge the students to take module mastery tests so mastery data are only rarely generated. As a result, from the achievement data collected and analyzed, it is clear that most of the learners using the PLATO system do not demonstrate mastery of many courses via these tests, and only a handful of learners master an entire curriculum.

Although the PLATO program is used primarily by elementary school students in an informal way outside school, the instructors feel very good about the role PLATO is playing in the overall education of the participants. One of the instructors remarked that they try to establish more of a one-on-one, learn-at-your-own-pace environment and PLATO allows us this freedom. Another instructor added that PLATO program allows (the) instructor to spend time addressing individual needs while keeping the entire class moving.

In addition to these observation, the instructors reported that they were very satisfied with PLATO as a powerful instructional and learning tool. The responses to the attitude survey regarding the software and its implementation and features were generally quite favorable.

The learner responses to the survey questions echo the instructors positive attitudes toward the PLATO program and its effects on helping students become better prepared for the academic demands of school. Students reported that they had no trouble signing onto the computers (m=4.48), that the computers were easy to use (m=4.43), that they were .studying what I need to on the computer (m=4.42), that working on the computer makes me feel good about myself (m=4.66), that they try hard to learn from the computer lessons (m=4.38), and that the computer lessons make me feel more confident about doing well in school (m=4.56). In addition, the students reportedly did not feel nervous about using a computer, and that they did not feel bad about themselves when giving a wrong answer. Many students also reported in the open-ended questions that the PLATO program helped them do better in school.

When asked about his overall impression regarding PLATO and its role in the Stark Metro education program, Ed Frankovich remarked Very positive! The children responded well. It has proven to be an outstanding tool in assisting our students to improve their schoolwork while improving their overall self-concept.

In addition to the learner benefits, Frankovich also had some positive remarks regarding PLATO support and program considerations. I ve already recommended it to others and will continue to do so. Hot line service and response is great. It has allowed us to maintain a negligible record of down time.

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